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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/800,651	03/16/2004	Shusuke Akazaki	107101-00050	1118
4372 7590 04/17/2007 ARENT FOX PLLC 1050 CONNECTICUT AVENUE, N.W. SUITE 400 WASHINGTON, DC 20036			EXAMINER NGUYEN, TU MINH	
			ART UNIT 3748	PAPER NUMBER
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		04/17/2007	PAPER	

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary**

Application No.

10/800,651

Applicant(s)

AKAZAKI ET AL.

Examiner

Tu M. Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 03 August 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1 and 7-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 7-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☒ Certified copies of the priority documents have been received in Application No. 08/975,101.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

### DETAILED ACTION

1. An Applicant's Amendment filed on August 3, 2006 has been entered. Claim 1 has been amended. Overall, claims 1 and 7-14 are pending in this application.

#### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office Action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Adamczyk, Jr. et al. (U.S. Patent 5,524,433) in view of Fujimoto et al. (U.S. Patent 5,201,173).

As shown in Figure 7, Adamczyk, Jr. et al. disclose a system for purifying exhaust gas generated by an internal combustion engine (32) having an air intake system (37) and an exhaust system which includes an exhaust pipe (43) extending from an exhaust manifold of the engine and a catalyst (44) installed in the exhaust pipe, the exhaust system exhausting gas generated by the engine to the atmosphere, comprising:

- a bypass (not numbered but clearly shown) branching out from the exhaust pipe at a location downstream of the catalyst (44) and merging to the exhaust pipe downstream of the branching point;

- an adsorber (31) installed in the bypass;
- valve means (47) which closes the bypass;
- a conduit (84) connected to the bypass at one end and connected to the air intake system for recirculating the exhaust gas to the air intake system;
- valve control means (35) which operates the valve means to open the bypass for a period since starting of the engine to introduce the exhaust gas to the bypass such that the adsorber installed in the bypass adsorbs the unburnt component in the exhaust gas (see Figure 1); and then closes the valve means to recirculate the adsorbed unburnt component through the conduit with the exhaust gas after having desorbed from the adsorber (see Figures 2 and 7);
- EGR control means (82) which causes the exhaust gas introduced in the bypass to be recirculated to the air intake system through the conduit;
- fuel injection quantity determining means (35) for determining a quantity of fuel injection to be supplied to the engine (lines 56-59 of column 7);
- air-fuel ratio detecting means (39) for detecting an air-fuel ratio of the exhaust gas;
- feedback loop means (35) having an adaptive controller with an adaptation mechanism that estimates an adaptive parameter (an amount of HC desorbed from the adsorber recirculating back to the engine), the adaptive controller calculates a quantity of fuel injection based on the estimated adaptive parameter such that the detected air-fuel ratio converges to a desired air-fuel ratio (stoichiometric air-fuel ratio) (see at least lines 56-59 of column 7);
- EGR correction coefficient calculating means (35) for calculating an EGR correction (the amount of HC desorbed from the adsorber recirculating back to the engine) when

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recirculating the exhaust gas to the air intake system (line 65 of column 7 to line 6 of column 8);  
and

- fuel injection quantity correcting means (35) for correcting the quantity of fuel injection based on at least the EGR correction (lines 51-59 of column 7).

Adamczyk, Jr. et al., however, fail to disclose that the adaptive controller calculates a quantity of fuel injection by employing a feedback correction coefficient.

As illustrated in Figure 1, Fujimoto et al. disclose a catalyst temperature control system for an internal combustion engine, comprising an EGR path (18) to recirculate a portion of an exhaust gas stream back to an engine intake. As indicated on line 39 of column 6 to line 11 of column 7, Fujimoto et al. teach that it is conventional in the art to compute a fuel injection period (TOUT in expression (1)) based on a feedback correction coefficient (KO2) in response to a detected oxygen concentration from an oxygen sensor (17) and an EGR correction coefficient (KEGR) so that an air-fuel ratio of a mixture to the engine is brought to the stoichiometric value. It would have been obvious to one having ordinary skill in the art at the time of the invention was made, to have utilized the teaching by Fujimoto et al. in the system of Adamczyk, Jr. et al., since the use thereof would have been routinely utilized by those with ordinary skill in the art to accurately control an engine air-fuel ratio to a desired or target value.

4. Claims 7-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Adamczyk, Jr. et al. in view of Fujimoto et al. as applied to claim 1 above, and further in view of Zahn et al. (U.S. Patent 5,613,359).

Re claim 7, the modified system of Adamczyk, Jr. et al. discloses the invention as cited above, however, fails to specifically disclose that the valve control means including catalyst

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temperature parameter detecting means for detecting a parameter relating to a temperature of the catalyst; and determines the period based on the detected parameter.

As illustrated in Figure 1, Zahn et al. disclose an exhaust gas purifying apparatus having a first catalyst (4) and HC adsorber (6) located in a bypass passage (5); wherein an ECU (9) controls a valve (8) in a open position during a period in which the HC adsorber is within a HC adsorbing temperature range. Zahn et al. teach that it is conventional in the art to utilize a temperature detecting means (11) to detect a temperature of the first catalyst such that the period is based on the detected temperature (see claim 1). It would have been obvious to one having ordinary skill in the art at the time of the invention was made, to have utilized the teaching by Zahn et al. in the modified system of Adamczyk, Jr. et al., since the use thereof would have been routinely utilized by those with ordinary skill in the art to control an operation of a HC adsorber to minimize HC emissions during an engine cold start.

Re claim 8, in the modified system of Adamczyk, Jr. et al., the valve control means decreases the period with increasing temperature of the catalyst.

Re claim 9, in the modified system of Adamczyk, Jr. et al., the valve control means decreases the period when the engine is under high load (in which an exhaust gas temperature is higher).

Re claim 10, in the modified system of Adamczyk, Jr. et al., the valve control means decreases the period when the engine is in a failsafe condition (lines 18-25 of column 6).

5. Claims 11-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Adamczyk, Jr. et al. in view of Fujimoto et al. and Zahn et al. as applied to claim 7 above, and further in view of Tomisawa (U.S. Patent 5,606,855).

Re claim 11, the modified system of Adamczyk, Jr. et al. discloses the invention as cited above, however, fails to specifically disclose that the parameter is a coolant temperature of the engine.

Tomisawa teaches an apparatus for estimating the temperature of a catalyst during an engine start-up simply and accurately by using a coolant temperature sensor (15). Tomisawa further teaches that the apparatus does not include an additional temperature sensor located at the catalyst, which can incur more cost to the apparatus (lines 64+ of column 1). It would have been obvious to one having ordinary skill in the art at the time of the invention was made, to have utilized the apparatus taught by Tomisawa in the modified system of Adamczyk, Jr. et al., since the use thereof would have saved cost and lowered the complexity of the system.

Re claim 12, in the modified system of Adamczyk, Jr. et al., the valve control means decreases the period with increasing temperature of the catalyst.

Re claim 13, in the modified system of Adamczyk, Jr. et al., the valve control means decreases the period when the engine is under high load (in which an exhaust gas temperature is higher).

Re claim 14, in the modified system of Adamczyk, Jr. et al., the valve control means decreases the period when the engine is in a failsafe condition (lines 18-25 of column 6).

*Response to Arguments*

6. Applicant's arguments with respect to the references applied in the previous Office Action have been fully considered but they are moot in view of the new ground(s) of rejection.

*Conclusion*

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office Action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

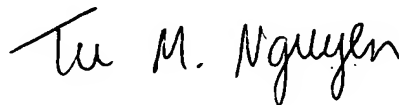


*Communication*

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Tu Nguyen whose telephone number is (571) 272-4862.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Thomas E. Denion, can be reached on (571) 272-4859. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



TMN

April 12, 2007

Tu M. Nguyen

Primary Examiner

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